

DRAFT 3

Wyoming State Governor's Brucellosis Coordination Team Report and Recommendations 12 October 2004

**BE ADVISED THAT THIS REPORT WAS CHANGED SIGNIFICANTLY
DURING THE TEAM'S NOVEMBER MEETING. NOVEMBER'S CHANGES
ARE NOT REFLECTED IN THIS DOCUMENT.**

Introduction

The Wyoming State Governor's Brucellosis Coordination Team (BCT) was charged with describing best management practices and developing recommendations related to brucellosis of wildlife and livestock in the state. The group was asked to provide very specific recommendations that detail actions, those responsible, and timetables where appropriate. Governor Freudenthal specifically asked that four topics be addressed:

- 1) Reclaim free status (cattle), surveillance, and transmission between species
- 2) Develop a road map of what to do in the event of a new outbreak in cattle
- 3) Address human health concerns
- 4) Reduce, and eventually eliminate brucellosis in wildlife, specifically address feed grounds

The issues were approached in the listed order. Recommendations for Topic 1 (cattle and transmission) were developed first. Topics 2 and 3 were addressed during the summer. The fourth topics (wildlife and feed grounds) consumed the bulk of the remaining discussions.

Information and education about various issues related to brucellosis in Wyoming were presented at each meeting. Separate educational topics have discussed basic information about brucellosis, brucellosis in elk, feed grounds, elk populations, USDA and the brucellosis-free status, the current cases, mapping and locations, and approaches being taken by other states. We have also attended a ½ day session on feedground issues that was sponsored by the Greater Yellowstone Interagency Brucellosis Committee. The group toured the Muddy Creek and Soda Lake feed grounds in July. Substantive discussions were initiated with cattle management and transmission issues due to the sequence of our approach. However, due to the transmission aspect, wildlife and cattle discussions took place throughout the process.

This report will consist largely of itemized Best Management Practices (BMP's) and Specific Recommendations. Background on discussions surrounding the development of the BMP's and Specific Recommendations is provided in the minutes from each meeting, which are found in the Appendix I. Additional information, including details of educational presentations, can be found on the State of Wyoming, Department of Agriculture WEB site, <http://wyagric.state.wy.us/relatedinfo/govbrucecoordinati.htm>.

Background and Process

The impetus for the formation of the BCT resulted from an outbreak of brucellosis in a herd of cattle from Sublette County Wyoming. Although the timing of events related to the outbreak is provided in Appendix II, briefly this outbreak resulted from contact

between affected elk in the Muddy Creek Elk Feed ground area that had been fed on private property.

Review of the case suggested that at the probable time of transmission may have been Spring, 2003. This occurred when the feed ground management could not obtain sufficient quantities of certified weed-free hay due to drought conditions. Thus, the US Forest Service would not allow feeding of non-certified weed-free hay on their nearby ground as is usually the case. Rather than continue to seek certified weed-free hay, permission was obtained to feed the elk on the private ground using non-certified hay. Apparently, insufficient distance and time separated the animals leading to transmission between the species.

The outbreak was recognized on slaughter trace-back in November of 2003. By December of 2003, the case was confirmed and 31 reactors had been identified on the suspected ranch. The USDA recognized the herd as "infected" officially on December 29, 2003. The USDA depopulated that herd on January 15, 2004 after it was appraised for owner indemnification at market value. Six of 12 cows traced to a Worland feedlot, after having passed through a sale yard that did not voluntarily test for brucellosis, from the index herd were identified as reactors in January. Despite a common origin, the USDA designated this herd as a second infected herd. As a result of that occurrence, other states were notified and Wyoming lost its "Brucellosis-free" status in February 2004.

The 31 reactor cattle were necropsied at the Wyoming State Veterinary Laboratory in Laramie WY. *Brucella* cultures were obtained from several animals. Further testing revealed that 4/14 elk from the Muddy Creek feed ground were reactors to brucellosis, suggesting they had been exposed. Three of those animals were subsequently harvested and one cultured positive for the bacterium. Subsequent genetic testing established a "99% similarity" in the genetic make-up of the isolates, suggesting strongly that the variety of brucellosis was the same in the elk and cattle, establishing transmission between the species.

On June 16, 2004, a second positive cow was identified in Wyoming. The cow had *Brucella abortus* biovar 4. She was one of 104 cattle in a Teton County herd. This herd had spent some time in Sublette County, and had also commingled with elk in Teton County. This owner elected depopulation of the herd as well. A contact herd was in the Grand Teton National Park on summer pasture when the case was identified and was not tested until September, 2004.

Testing in the fall on a contact herd related to the Teton County case revealed 4 brucellosis positive cows from that herd.

Another new case was presented in early July, 2004 from Gillette Wyoming. Two aged cows from a group of 50 were found to be reactors when sold in South Dakota. The cattle came from a herd of 300 plus cows. Follow-up testing suggested field-strain brucellosis, biovar 1. The animals in this herd were reported to have commingled with elk. The index herd plus 5 additional, contact herds with a total of about 1500 cattle were quarantined for testing.

The index herd from Campbell County, along with contact herds tested negative for brucellosis. A test in October on the index herd also was negative for brucellosis. Subsequent epidemiology studies indicated that this was a largely closed herd and no bovine source of brucellosis was identified. Testing of over 100 elk in that region revealed no positive cases of brucellosis exposure in elk. A follow-up investigation strongly suggests that the isolates from this case closely matched a 10 year old isolate from the UUU bison herd in South Dakota. These findings, along with the text of an investigation of the laboratory in South Dakota suggest that this was not likely to have been a field case of brucellosis and may well have resulted from laboratory error.

These subsequent findings have prolonged the time that Wyoming will remain at Class A status for 1 year past the designation of the new positive herd.

Given the series of unusual occurrences, and given the ongoing problem of having a wildlife reservoir of brucellosis in the face of a domestic eradication program, this team was asked to study and make recommendations about the issues presented by brucellosis in Wyoming.

The team consisted of 19 members and an additional 9 technical advisors. A roster of BCT members, affiliations, and roles is provided in Table 1:

Name	Home	Affiliation	Role
Rob Hendry	Lysite, WY	Rancher	Member
Joel Bousman	Boulder, WY	Rancher	Member
Bill Lambert	Osage, WY	Rancher	Member
John Etchepare	Cheyenne, WY	Director, WY Dept. of Agriculture	Member
Brad Mead	Jackson, WY	Attorney & Rancher	Member
Terry Cleveland	Cheyenne, WY	Director, WY Dept of Game & Fish	Member
Dr. Jim Logan	Shoshone, WY	WY State Veterinarian	Member
Cathy Purves	Lander, WY	WY Wildlife Federation	Member
Bob Wharff	Evanston, WY	Sportsmen for Fish and Wildlife	Member
Dr. Ken Mills	Laramie, WY	Wyoming State Veterinary Lab	Member
Dr. Tom Thorne	Laramie, WY	Advisor to Game and Fish Dept.	Member
Terry Pollard	Pinedale, WY	Outfitter	Member
Shawn Madden	Torrington, WY	Torrington Livestock Market	Member
Albert Sommers	Pinedale, WY	Rancher	Member
Dr. Bill Williams	Thermopolis, WY	Veterinarian, Game & Fish Comm.	Member
Dr. Karl Musgrave	Cheyenne, WY	WY Dept. of Health	Member
Sen. John Hines	Gillette, WY	WY State Senate	Member
Rep. Monte Olsen	Daniel, WY	WY House of Representatives	Member
Dr. Frank Galey	Laramie, WY	UW College of Agriculture	Member
Scott Werbelow	Pinedale, WY	WY Game & Fish (Feedgrounds)	Technical
John Keck	Cheyenne, WY	US Park Service	Technical
Brent Larson	Jackson, WY	US Forest Service	Technical
Marty Griffith		BLM	Technical
Dr. Bret Combs	Cheyenne, WY	USDA-APHIS	Technical
Dr. Donal O'Toole	Laramie, WY	WY State Veterinary Laboratory	Technical
Dr. William Gern	Laramie, WY	UW Vice-President for Research	Technical
Ryan Lance	Cheyenne, WY	Governor Freudenthal's office	Technical
Dr. Terry Kreeger	Wheatland, WY	WY Game & Fish	Technical
Erika Olson	Laramie, WY	Attorney General's Office	Technical

The team met 11 times. Early meetings were one day each through April. Following that, the group met for 2 days each month. In addition, subcommittee chairs for each of the four topics met once monthly by teleconference. Group meetings were held in Pinedale (n=3 meetings), Lander (n=5 meetings), Jackson (n=1 meeting), Gillette (n=1 meeting), and Casper (n=1 meeting).

Topic 1 - Reclaim free status (cattle), surveillance, and transmission between species:

The team identified numerous issues related to keeping cattle free of brucellosis and transmission between species. Following those discussions, the group developed a list of Best Management Practices (BMP's). These items form a 'toolbox' that could be useful in helping managers address cattle, transmission, and brucellosis. The group then generated short- and long-term recommendations for the Governor and legislature. Issues that were discussed are outlined in the minutes of the various meetings. BMP's and recommendations follow.

Best Management Practices

Best management practices (BMP's) are to be looked at as potential tools, applicable in many, but not all situations. This section will be followed by development of detailed recommendations.

I. Herd health practices:

1. Blood test any cow that aborts for brucellosis
2. Submit aborted fetuses to state veterinary laboratory for testing
3. Segregate any cow that aborts from the rest of the herd
4. Any open cow (not pregnant) that is retained should be tested
5. Test and sell dry cows before breeding
6. Cull every cow that is open; also ship cows which don't bring home a calf for unknown reasons
7. Producers should avoid elk and bison calving areas when possible
8. Continue to calfhood vaccinate eligible cattle – on a mandatory basis, statewide
9. Enforce regulations regarding brucellosis vaccination of commuter cattle
10. Vaccinate adult cows in high risk areas (in coordination with appropriate officials)
11. Monitor calving rates (percentages) in cattle
12. Feed and calve in areas that are not in close proximity to elk feedgrounds
13. Notify GF immediately upon commingling
14. Know source of replacement cattle
15. Maintain official metal ID tags on cattle
16. Wyoming State Veterinarian and USDA-APHIS shall identify herds which may be subject to whole herd vaccination.

II. Practices to minimize transmission from wildlife and between cattle:

1. GIS mapping of risk factors, land patterns, parturition areas, elk damage areas, feedgrounds, seroprevalence of herd units, cattle feeding areas, type of cattle operation, stackyard locations, history of elk and cattle herd disease, habitat improvement areas, migration routes, allotments, land ownership, winter range, precipitation patterns, etc.
2. Make available applicable public data, including mapping, to stakeholders. (Livestock board, APHIS, Producers, G&F, area Veterinarians, Agencies, public)
3. Additional fencing via feedground management plans
4. Individual herd unit management plans with specific sections for each feedground.

5. Maintain elk/cattle separation (spatial and/or temporal) during critical periods of exposure. Individual management plans should address those critical periods of exposure.
6. Elkproof fence livestock stackyards when appropriately incorporated into management plans
7. Feed on fresh snow when possible and spread animals out as much as possible.

III. Surveillance:

1. Follow APHIS and Livestock Board rules with regard to testing.
2. Cull cattle shall be tested prior to change of ownership.
3. Continue to test test-eligible cattle or bison from non-certified brucellosis free herds from high risk areas after regaining free status on change of ownership or on movement from the area.
4. Work with State and APHIS in promoting voluntary certified brucellosis free herds in the risk area.
5. Base a Federal Veterinarian in the Sublette/Teton/Northern Lincoln county area who is specifically assigned to brucellosis issues

Recommendations:

1. Brucellosis Management plans:
 - a. The Game and Fish Department shall develop herd unit brucellosis management plans. These plans shall be formulated to include management plans for individual feedgrounds developed in consultation with affected parties and livestock health advisors including the state veterinarian and USDA-APHIS veterinarian. These plans are to be in place by (Timeframe TBA). Plans that are developed shall be subject to periodic review according to local concerns and conditions.
 - b. The State of Wyoming shall ask the USFWS National Elk Refuge and Park Services to develop similar brucellosis management plans for elk and bison, in consultation with neighboring landowners and state regulatory health and wildlife officials. These plans should be in place by (Timeframe TBA). Plans that are developed should be subject to periodic review according to local concerns and conditions.
 - c. Cattle producers in the vicinity of feedgrounds should have their own brucellosis management plans in place. This should be done in conjunction with the development of individual State and Federal elk feed ground brucellosis management plans.
2. Surveillance Testing:
 - a. The Wyoming Livestock Board shall make a formal response to the USDA-APHIS brucellosis program review.
 - b. The livestock board will promulgate rules amending the existing Chapter 2 brucellosis rules to enhance brucellosis surveillance testing including implementation of the "workable provisions" of the USDA-APHIS program review.
 - i. The amended rules shall mandate the testing of all test eligible female cattle and bison that are over the age of 24 months on the change of ownership and premises. This mandated testing shall

be for a period of 3 years following the state's achieving "Brucellosis Free" status again, at which time the entire brucellosis surveillance program shall be reviewed by the WLSB. The entire brucellosis issue shall subsequently be reviewed every three years thereafter for a total of at least 9 years (3 reviews). Each review shall evaluate recommendations from this task force, including timelines and adherence to deadlines in addition to formulating new recommendations as needed.

- ii. Producers should report and veterinarians should be brought in to investigate, cattle abortions in order to enhance surveillance.
 - iii. The legislature and the USDA-APHIS should fund this ongoing surveillance testing of blood samples and abortion cases.
3. The Wyoming Livestock Board and the USDA-APHIS will work with producers to achieve Certified Brucellosis Free Herd status.
 - a. It is recommended that the State legislature pursue support from USDA-APHIS, to assist producers with achieving certification.
 - b. The WLSB shall pursue working MOU's with trading partner states to assure acceptance of Certified Brucellosis Free herd status. (move to lower priority)
4. Enhancement of veterinary support for managing brucellosis in cattle will allow for improved surveillance and responses to outbreaks.
 - a. It is requested that APHIS maintain a Federal Veterinarian in the Northwest part of the State who is dedicated to brucellosis.
 - b. Further, WLSB and USDA-APHIS should assemble local, practicing veterinarians throughout the state to provide additional training in brucellosis management and surveillance.
 - c. Request APHIS to provide best available screening test (e.g. FPA Fluorescence Polarization test) at sale barns throughout the state.
5. Facilitate the research that is critical to managing brucellosis in wildlife and livestock. To do this, the Governor and congressional delegation must obtain either an exemption under the Select Agent rule so that applied research on *Brucella abortus* can be performed in secure federally approved outdoor facilities in Wyoming and elsewhere or to seek to have *B. abortus* reclassified an agricultural agent.
6. It is recommended that the Governor and congressional delegation coordinate an effort to achieve research and development of more effective brucellosis treatments, tests, vaccines and/or vaccination strategies for cattle, elk and bison.
7. Develop an understanding of how changes in ranch enterprises (affecting transmission of the disease), as well as brucellosis in general, may interact with rural economies.
 - a. Funding is requested to investigate and explain incentive programs or alternative ranch enterprises which producers may voluntarily employ to reduce wildlife/cattle transmission risk.
 - b. Funding is requested to quantify the economic impact of brucellosis in Wyoming.

8. Ask the legislature to make support dollars for brucellosis personnel at the state vet lab permanent.

Topic 2 - Develop a road map of what to do in the event of a new outbreak in cattle:

Best management practices: A roadmap to follow in the event of a new outbreak in cattle

- I. The USDA-APHIS Uniform Methods and Rules for Brucellosis and the WLSB Chapter 2 Rules will be followed in the regulatory handling of a confirmed case of brucellosis in Wyoming.
- II. Create a Regulatory Decision Group: State Veterinarian, APHIS VS AVIC, Designated Brucellosis Epidemiologist, Assistant State Veterinarian, APHIS VS Veterinary Medical Officer.
- III. The Regulatory Decision Group will evaluate the test data and herd history in cooperation with the owner and owner's veterinarian, if requested (The following will be considered: pregnancy status of the animal, calving history, vaccination history of animal and herd, age of animal, closed versus open herd status, potential exposure to infected wildlife, strength of the titer response, whether cattle are run alone or in common with other herds?).
- IV. If a reactor is negative on culture and at the discretion of the Regulatory Decision Group a herd test and/or follow-up test could be completed
- V. If serologic tests result and/or herd history suggest suspicion of brucellosis:
 1. Quarantine is issued by WLSB
 - a. of individual animal, if suspect
 - b. of entire herd if reactor
 2. Animal may be slaughtered and tissues collected for culture, or
 3. retest of animal 30 days after initial test if only "suspect"
 4. Whole herd test would take place, unless there is a reactor and the owner decides to depopulate the herd.
- VI. If follow-up testing confirms presence of field strain *Brucella abortus*:
 1. Quarantine is continued and strengthened, if necessary, including whole herd test of affected herd.
 2. APHIS AVIC and State Veterinarian notify producer and a personal meeting is scheduled
 3. Epidemiological investigation is then implemented
- VII. Notification Process:
 1. State Veterinarian notifies WLSB and Governor upon strong suspicion of infection
 2. Confidentiality maintained until confirmation
 3. APHIS VS AVIC notifies West Region Director and GYA Brucellosis Coordinator and APHIS Brucellosis Staff and other states' AVICs
 4. State Veterinarian Notifies:

- a. WDA Director
- b. Local Veterinarians
- c. WGFD Director
- d. WDH Director
- e. WSVL Director
- f. Executive Directors of Industry Organizations
- g. Wyoming Livestock Auction Markets
- h. Other Wyoming Licensed Veterinarians
- i. Other States' State Veterinarians
- j. Local Cattle Associations

VIII. Communication Tree Established to Share Information and Daily Updates, Including:

- 1. State Veterinarian and Assistant State Veterinarian
- 2. USDA Area Veterinarian in Charge
- 3. Wyoming Livestock Board
- 4. Wyoming Livestock Board staff members
- 5. Local Veterinarians
- 6. Other Veterinarians in Wyoming
- 7. USDA Animal Plant Health Inspection Service
- 8. Wyoming Veterinary Medical Association
- 9. Wyoming Department of Agriculture
- 10. Wyoming Game and Fish Department
- 11. Wyoming State Veterinary Laboratory
- 12. Wyoming Department of Health
- 13. Wyoming Governor's Office
- 14. Wyoming Stock Grower's Association
- 15. Wyoming Wool Grower's Association
- 16. Wyoming Farm Bureau
- 17. Rocky Mountain Farmer's Union
- 18. Local Cattle Associations
- 19. Brand Inspectors
- 20. Key State Veterinarians and Directors of Agriculture
- 21. Affected and contact herd owners

IX. The Director of Wyoming Department of Agriculture and the State Veterinarian should make personal contacts with key neighboring state veterinarians and director of departments of agriculture

X. The State Veterinarian works with Governor's press secretary as media contact person.

XI. Meetings between Regulatory Decision Group are held as needed.

XII. As epidemiological information becomes available:

- 1. Contact and schedule adjacent herd tests
- 2. Discussions with affected herd owner continue regarding removal of reactors and depopulation of the herd

Recommendations

1. Pursue legislation that would require livestock trader/dealer registration with the Wyoming Livestock Board in accordance with APHIS regulations to facilitate regaining and maintaining Brucellosis Class Free status.
2. Pursue legislation that would authorize the Wyoming Livestock Board to utilize brand inspectors to help with animal health quarantines and movement restrictions. Appropriate funding should be supplied.
3. Create a compensation review program and board, through appropriate legislation, to review all compensation applications from a brucellosis case in domestic cattle or bison believed by the claimant to have originated from wildlife. Reimbursements may not be available to owners of infected herds who do not opt for depopulation. The reimbursement program shall address:
 - a. Transportation costs associated with depopulation
 - b. Feed costs associated with depopulation
 - c. Lost marketing opportunities during the quarantine period, including loss of a calf crop when appropriate
 - d. Costs associated with testing
 - e. Board membership to consist of:
 - i. Member of the Wyoming Livestock Board
 - ii. Director of the Wyoming Department of Agriculture
 - iii. Representative of the Wyoming cattle industry
 - iv. Livestock producer from the area of the outbreak
4. Convene the Regulatory Decision Group to follow the best management practices road map in the event of an outbreak:
 - a. State Veterinarian
 - b. USDA APHIS VS AVIC
 - c. Designated brucellosis epidemiologist
 - d. Assistant State Veterinarian
 - e. APHIS VS Veterinary Medical Officer
5. The Wyoming State Veterinarian, along with APHIS-Veterinary Services Colleagues shall require for all positive brucellosis case that affected tissues be held for one year after the case is designated as a positive.

Topic 3 - Address human health concerns:

Best Management Practices

- I. Persons Handling Wildlife and Livestock Tissues:
 1. Practice good hygiene during and after handling all raw meat and viscera
 2. Wear impermeable (latex) gloves
 3. Minimize blood and uterine fluid contamination of clothing. Launder clothing properly.

4. Protect open wounds, eyes, mouth and nose from exposure to blood and uterine fluids
 5. Do not handle female reproductive tract or fetal material and avoid cutting into swollen joint tissues
 6. Wash hands thoroughly
- II. Brucellosis Vaccine Exposure: See a health care provider. The health care provider should:
 1. Collect a baseline blood sample for testing of antibodies
 2. Administer appropriate antibiotics for three to six weeks
 3. At the end of three weeks, recheck the patient with a second blood sample
- III. Pregnant Women and Immunocompromised People Living and Working In Potentially Infected Areas:
 1. Stay away from animal birthing/abortion areas
 2. Consume only pasteurized dairy products
 3. Wash hands often
 4. Remove visibly contaminated clothing and boots and wash hands thoroughly before entering the household of a pregnant woman or immunocompromised person
 5. Avoid handling newborns and raw milk
- IV. Persons Working In a Laboratory Setting with Brucellosis:
 1. Follow Biosafety in Microbiological and Biomedical Laboratories (BMBL) rules
- V. Persons Living and Working on a Ranch Where Brucellosis Has Been Detected:
 1. Recommend family consultation with their local health care provider to assess exposure and risk of infection
 2. If physician has questions, they are encouraged to contact the Wyoming Department of Health
- VI. Wyoming Department of Health and physicians:
 1. Promote awareness of Brucellosis among area health providers to promote an index of suspicion in persons presenting with a compatible illness and consistent epidemiological history and encourage testing
- VII. Investigations:
 1. An appropriate epidemiological investigation should be conducted around all confirmed Brucellosis cases to identify the possible sources of transmission
 2. All isolates of Brucellosis should be identified to the species/biovar level to facilitate recognition of the relevant food and or animal source of infection

3. Confirmatory serologic testing should be performed to identify the species of *Brucella* in patients with Brucellosis

VIII. Veterinarians, Wildlife Personnel and Ranchers:

1. Wear impermeable gloves and eye protection when assisting calving or aborting animals
2. Scrub with soap and water after all procedures
3. Cover open wounds
4. Clean and disinfect calving areas and other places contaminated with infective materials
5. Contact health care provider in case of vaccine exposure
6. Use appropriate procedures when handling fetal materials

IX. Slaughter House Workers in Plants Accepting Known Infected Animals:

1. Use personal protective equipment (eye shields, gloves, masks)
2. Employ additional cleaning and disinfection practices

X. Mental Health:

1. Provide timely and accurate information about the event or threat to the public during an event or threat
2. Provide a forum to share concerns and have questions answered during an event or threat
3. Let people know the normal range of human responses to this type of event/threat
4. Let individuals know about appropriate coping behaviors
5. Let people know about professional mental health resources and how to contact them
6. Develop a risk management communication plan and materials for Brucellosis
7. Have written materials and professional resources on mental health identified
8. Have reminder information available to doctors to be on the lookout for symptoms of brucellosis and symptoms of depression, anxiety, and general stress
9. Have a distribution plan that alerts health care providers and puts mental health information in places where people naturally go (chiropractor, minister)

Recommendations

1. The State Health Officer and/or State Public Health Veterinarian shall develop, by July 1, 2005, a public communications response plan to a future brucellosis case in cattle. This plan should be implemented cooperatively upon notification of a new case
2. The Wyoming Department of Health, in consultation with appropriate agencies, should formulate appropriate protocols for Wyoming physicians, within the year (2004), to follow when individuals are exposed to Brucellosis,

whether through exposure to an infected animal/animal tissue, a vaccine stick, lab exposure or otherwise.

3. The Wyoming Department of Health will explore a prospective study to assess the incidence of human Brucellosis among high-risk exposure groups.

Topic 4. Reduce, and eventually eliminate brucellosis in wildlife, specifically addressing elk feed grounds

The Wyoming Brucellosis Coordination Team believes it imperative that all parties work together to assure success in achieving the goals of the Wyoming brucellosis program. State agencies should work with Federal agencies to assure cooperation and participation in all aspects of Wyoming's wildlife brucellosis programs.

Best Management Practices (BMP's)

Most, if not all, BMP's will be incorporated into Game and Fish Brucellosis Management Action Plans (BMAP), which will include elk feedground management and will be prepared with consultation and input from area livestock producers and APHIS. Many BMP's identified by the Wildlife Brucellosis Issues Subcommittee are currently in use, or ongoing, and are routinely followed. Other BMP's are old or new ideas and should be utilized in planning, most likely through a check-off process that will assure they are considered and, if not used, there will be an explanation why they were not used.

Draft Wildlife Brucellosis Issues were circulated to subcommittee members on 20 July 2004. In that draft, many potential and existing BMP's were identified as practices that are or should be considered in preparation of BMAP's. Issues were considered as controversial, potential recommendations, problematic because of one or more obstacles to implementation, and as appropriate topics for research. Most BMP's were relatively non-controversial and did not receive significant comment by subcommittee members; these BMP's are addressed here according to topic. The BMP's are presented following the outline used in the draft Wildlife Brucellosis Issues, and BMP's are identified by lower case numbers.

- I. Habitat Improvements and Habitat Acquisition
 - A. Habitat Enhancement
 1. Early communication about proposed habitat enhancements to/with all affected stakeholders
 2. Completed habitat enhancements-Document completed enhancements and effects on brucellosis management
 3. Opportunities for future habitat enhancements-Document opportunities for the next 5 and 10 years-Consider political, funding, logistic, and technical obstacles to implementation
 4. Identify ongoing and potential losses of winter range and/or existing migration corridors to urban, oil/gas, etc. development-Consider political, financial, economic, logistic, technical, etc ramifications-Notify appropriate administrative authorities
 - B. Reduced Reliance On Elk Feedgrounds
 1. Opportunities for future habitat enhancements on private and public land to minimize time elk are fed, especially in spring-

Consider political, funding, logistic, and technical obstacles to implementation

2. **Consider efforts to encourage early departure.** Terminate feeding early-Consider logistic and technical ramifications of modifying feeding periods to reduce intraspecific transmission of brucellosis

II. Prevent Interspecific Brucellosis Transmission

A. **Cooperatively work with producers toward** Separation of feedground elk and cattle during winter and early spring **(livestock producer references go away)**

1. Develop specific management strategies for each elk feedground to reduce elk-cattle co-mingling during the critical period of February 10-June 15-Consider and categorize risk factors and occurrence of sporadic or chronic co-mingling to achieve maximum spatial and temporal separation
2. Work with **at risk or exposed** livestock producers in order to locate and map cattle use areas closest to feedgrounds- Document whether distances between elk and cattle use areas can or cannot be increased
3. Where acceptable to **involved parties** at risk of co-mingling, fence hay stack yards with permanent or temporary methods- Consider funding sources and technical obstacles
4. Where acceptable to **involved parties** at high risk of co-mingling, fence cattle feed lines with permanent or temporary methods-Consider funding sources and technical obstacles
5. Consider fences between elk feedgrounds and cattle- Document existing fences and potential to improve existing fences or build new fences-Consider and document political, financial, logistic, and technical obstacles **(point made about fence zoning restrictions, migration routes, etc.)**
6. Consider opportunities to relocate feedgrounds to increase separation between elk and cattle-Consider and document political, financial, logistic, and technical obstacles
7. **Consider opportunities to redesign feedgrounds to...**
8. Include plans for timely and adequate response when livestock producers report co-mingling-Consider and document financial, logistic, and technical obstacles
9. Invite livestock producers in areas **where damage and co-mmingling have occurred** the vicinity of each feedground to meet with WGFD personnel to discuss what can be done from the perspective of both livestock management ideas that are workable and producers are willing to voluntarily implement, as well as what the WGFD can do to manage elk to prevent co-mingling
10. Include **State** elk feeders in planning process

B. Separation of cattle from elk and bison during late spring and summer

1. Identify and map sites where co-mingling occurs or has a potential to occur after termination of feeding and before June

- 15 with emphasis on elk and bison parturition areas-Prioritize according to high risk vs. low risk
2. Identify elk and bison spring and fall migration corridors- Prioritize according to high vs. low risk-Recommend changes to lower risk
3. Consider drift fences for achieving spatial separation of cattle and elk and bison-Document existing fences and potential to improve existing fences or build new fences-Consider and document political, financial, logistic, and technical obstacles
4. Invite livestock producers with cattle exposed to parturition areas, migration corridors, etc. to meet with WGFD personnel and Land Management agencies to discuss what can be done from the perspective of both livestock management ideas that are workable and producers are willing to voluntarily implement, as well as what the WGFD can do to manage elk to prevent co-mingling

III. Elk and Bison Management

A. Brucellosis Control/Elimination

1. Utilize all BMP's as a tool box of options in preparation and implementation of BMAP's-Document that each BMP was considered and included or was not included with justification
2. Formally review BMAP's annually and modify as needed- Document implementation and, especially, actions that were not implemented
3. Establish measurable goals and objectives and bench marks toward brucellosis management/elimination-Document bench marks achieved and not achieved

B. Population Objective

1. Perform periodic scheduled review of the herd unit objective.
2. Meet with and educate landowners about the importance of providing access (with respect to population and disease mgmt.)
3. Consider all the factors impacting population objectives; such as hunting, socioeconomic impact, disease, habitat analysis, public input, historic numbers, distribution, private landowner concerns, access, etc.
4. Consider biological tolerance of the habitat in setting population objectives

C. Vaccination

1. Vaccinate elk and bison

D. Surveillance/Monitoring

1. Utilize hunter-killed elk and bison blood samples in non-feedground areas to document distribution and prevalence of brucellosis-Evaluate validity of techniques, frequency, numbers, etc. to assure statistically valid surveillance
2. Utilize hunter-killed elk blood samples to conduct state-wide surveillance for brucellosis outside the Wyoming portion of the GYA-Surveillance may take 2-3 years to complete-Evaluate validity of techniques, frequency, numbers, etc. to assure statistically valid surveillance-Repeat on a 10 year cycle

3. Trap and sample feedground elk to monitor seroprevalence and efficacy of brucellosis management/elimination activities-Evaluate validity of techniques, frequency, numbers, etc. to assure statistically valid surveillance
4. Improve/**expand** traps on feedgrounds, including the National Elk Refuge, as necessary to assure sampling of the feedground population is adequate and representative-Consider political, financial, logistic, and technical obstacles.
(Recommendation)

E. Information/Education

1. Develop and implement an information/education plan as part of BMAP's-Include explanation of need to manage/eliminate brucellosis, management/elimination efforts, **sample collection** progress, social and economic impacts of management, etc.
2. Encourage and facilitate interagency (Federal/State) communication, cooperation, and collaboration-If necessary, involve appropriate administrative authorities for resolution of conflict.

IV. Elk Feedground Management

A. Elk feedgrounds

1. Address proximity to high risk cattle operations-manage to lower risk to cattle
2. Utilize feedground to prevent elk-cattle co-mingling
3. Consider feedground location and land jurisdiction-Manage to lower risk to cattle
4. Opportunities for daily/frequent feed line change-maximize
5. Recover all aborted elk fetuses-Use appropriate protective practices to human and animal health-Submit to the WGFD Disease Laboratory
6. Separate elk feeding and bedding areas-If space/logistics allow feed elk as far as possible from bedding and loafing area
7. Increase physical size of feedground if space/logistics **allowing increased dispersion of animals** on the feedground-Consider and document political, financial, and logistic obstacles if feedground enlargement is not possible
8. **Consolidate** feedgrounds-Consider and document political, financial, and logistic obstacles if combination is not possible

V. Funding

A. Wyoming Game and Fish Department (Wyoming Legislature)

1. BMAP's will include a detailed budget for full implementation and identification of funding sources-If Maintenance and Operations budgets do not cover full implementation, notify appropriate administrative authorities-Seek Legislative and/or Congressional assistance

Recommendations

1. As part of the BMAP process, specific short term seroprevalence targets and timelines for achievement will be set in concert with minimal impact (e.g., <10% loss in population objective via test and remove, contraception, etc.).

Quickly establish a 5 year pilot project which institutes a seroprevalence reduction program on the Pinedale Herd unit. Options to reduce seroprevalence may include but not be limited to:

- a. Test and Harvest hunting of low risk seropositive cows.
 - b. High risk seropositive elk removed.
 - c. Research elk reproductive management which may include contraception, artificially induced abortion, etc., in young positive cows.
 - d. Create a brucellosis team sufficient to implement the recommendation.
 - e. Permanently identify any elk trapped, tested and released from feedgrounds.
 - f. Vaccination programs
 - g. Expanded feedground area
 - h. Habitat manipulation
 - i. If seroprevalence reduction program is successful, these data will be shared with the GYIBC with the intention that a similar program will be implemented on the National Elk Refuge. The Governor and congressional delegation should seek federal funding to accomplish this task.
 - j. Obtain traps/corrals (portable and/or permanent) on feedgrounds to help in the testing, vaccination, and removal of positive elk.
2. On a rotating 5 year cycle, WGFD, with public input process, evaluate on a case by case basis, elk herd unit population objectives (where brucellosis is present) and as part of the BMAP process, evaluate opportunities to modify or phase out each elk feedground, perhaps after reduction of seroprevalence, within the herd unit.
3. Habitat: Create and fund an elk and wild bison fund to maintain and enhance elk habitat in order to decrease risk of brucellosis transmission.
- Provide diverse incentives for producers and landowners
 - Provide incentives to encourage responsible housing development in critical areas
 - Take advantage of every opportunity to improve or expand habitat to reduce reliance on feedgrounds and distribute elk more widely in a manner which will reduce elk and bison/cattle co-mingling
 - Use dollars from habitat improvement funds to purchase agriculture-friendly open space/conservation easements, such as term easements, from willing landowners (sellers) to maintain critical migration and habitat areas for elk.
4. Research: Research into breaking the cycle of brucellosis in elk: Vaccines, fertility control, population management, decrease in concentration. Provide enhanced funding and facilities and research for improved vaccines and vaccine applications for wildlife and cattle. Develop and employ chute side test to differentiate between seropositive and infected elk.
- a. Make blood tubes available to all hunters in order to facilitate hunter surveillance for brucellosis.
 - b. Develop improved and more efficacious and easily delivered brucellosis vaccine for wildlife.

- c. If there is correlation between feedground size, animal density and seroprevalence then implement density reduction via population adjustment or feedground size.
5. Bison populations: Explore all options to implement state management of bison. Governor should pursue, through courts if needed, management of population of the Jackson Bison Herd. Request that Congress to direct the National Park Service to address brucellosis in elk and bison in parks and the US Fish and Wildlife Service to do the same on the National Elk Refuge. Governor should ask for NSF study on range tolerance as part of the planning for the National Elk Refuge and Parks' wildlife populations.
 - a. Vaccinate free-roaming bison.
 - b. Bison population should be reduced to the goals established by the Wyoming Game and Fish Commission.
6. The BTF does not recommend closure of any feedgrounds in the foreseeable future.
7. Economic impacts; Fund a cost-benefit-risk assessment of the economic, biologic, and social costs of the options identified by the task force. management/control of brucellosis (at what level?) vs. eradication. (what is the cost of living with the disease vs. getting rid of it.) This all goes to the Kreeger Research committee
8. The Wyoming Game and Fish Department, Wyoming Livestock Board, Wyoming Department of Agriculture, USDA APHIS, Wyoming Department of Health, and the Cooperative Extension Service shall develop an aggressive education/outreach program for non-consumptive and consumptive publics on brucellosis. Part of that education will help identify and address hunter and administrative access issues related to brucellosis management.
8. Enact legislation prohibiting private, intentional feeding of wild ungulates where it encourages commingling of cattle with either elk or bison or otherwise encourages spread of brucellosis. (recommend to Travel, Rec. Wildlife, and Cultural Resources legislative committee.)
7. The Governor should convene this taskforce annually to evaluating progress on this team's recommendations.
8. Encourage Governors Freudenthal, (MT Gov), and Kempthorn to gather and re-address the GYIBC's focus, and more aggressively address its goal, mission and objectives.
9. Encourage USDA and DOI to partner with the state in funding brucellosis eradication efforts including the use of non-traditional management practices in the control of brucellosis in wildlife.
10. Perform DNA fingerprints of archived isolates for prospective studies.

- a. Create a searchable database for DNA fingerprints archived in Wyoming, NVSL/ARS, and nationwide.
13. Provide legislative appropriated general funding as a standard budget to the Wyoming Game and Fish Commission for personnel, supplies, and equipment in order that the Department can fund and staff an adequate program that has the goals of 1) eliminating brucellosis in elk and wild bison; and, 2) eliminating the potential for spread of brucellosis from elk and wild bison to livestock .